

Appln. No.: 10/631,071
Response dated Feb. 20, 2008
Reply to Office action of Aug. 20, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1-29. (Canceled)

30. (Previously presented) A communication network supporting wireless communication comprising:

at least one roaming wireless terminal node selectively operable in a sleep mode and in an awake mode;

at least one bridging node for relaying messages, the bridging node storing messages for wireless terminal nodes and transmitting at predetermined intervals a first message that indicates the presence of pending messages, the bridging node forwarding a stored message upon request from a wireless terminal node; and

the wireless terminal node, while in a sleep mode, wakes to listen to a first message transmitted from a bridging node to determine whether to request a pending message.

31. (Previously presented) A communication network as recited in claim 30 wherein the bridging node determines whether a wireless terminal node has been disconnected from the network.

32. (Previously presented) A communication network as recited in claim 31 wherein the bridging node considers whether a wireless terminal node is in a sleep mode in making a determination of whether the wireless terminal node has been disconnected.

33. (Previously presented) A communication network as recited in claim 30 wherein the terminal node includes a transceiver and when in the sleep mode the terminal node disables the transceiver.

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34. (Previously presented) A communication network supporting wireless communication comprising:

at least one terminal node having a wireless transceiver operable in a normal state and in a power saving state;

at least one bridging node having a wireless transceiver to support communication to a terminal node, a bridging node attempting to deliver a message destined for a terminal node operating in a normal state upon receipt of the message by the bridging node and the bridging node attempting to deliver a message destined for a terminal node operating in a power saving state by transmitting at predetermined intervals a first message identifying terminal nodes having a pending message awaiting delivery;

a terminal node operating in the power saving state synchronizing operation of its transceiver to receive the first message from a bridging node and when the terminal node determines from the first message that it has a pending message awaiting, the terminal node directing further operation of its transceiver to receive the pending message.

35. (Previously presented) A communication network as recited in claim 34 wherein the terminal node transmits to a bridging node an indication of whether the terminal node is operating in the power saving state.

36. (Previously presented) A communication network as recited in claim 34 wherein a terminal node that directs further operation of its transceiver to receive a pending message does so to receive the pending message in a time period that follows one of the received first messages.

37. (Previously presented) A communication network as recited in claim 36 wherein the time period immediately follows the one of the received first messages.

38. (Previously presented) A communication network as recited in claim 34 wherein a terminal node requests a pending message when the terminal node determines from the first message that it has a pending message awaiting delivery.

39. (Previously presented) A communication network as recited in claim 34 wherein the bridging node stores messages awaiting delivery.

40. (Previously presented) A communication network as recited in claim 39 wherein the messages awaiting delivery remain stored until delivery is successful or until a predetermined number of first messages occur where delivery is unsuccessful.

41. (Previously presented) A communication network as recited in claim 36 wherein the time period follows the received first messages during an awake time window.

42. (Previously presented) A communication network as recited in claim 41 wherein the terminal node requests that the pending message be delivered during the awake time window.

43. (Previously presented) A method for operating a bridging node and a roaming wireless terminal node in a communication network comprising:

- storing at a bridging node pending messages;
- transmitting from a bridging node at predetermined intervals, a first message indicating the presence of pending messages;
- operating the terminal node in a sleep mode;
- waking the terminal node to receive a first message;
- determining at the terminal node from a received first message whether a bridging node has a stored pending message for the terminal node; and
- requesting a pending message if a pending message is determined to be stored at a bridging node for the terminal node.

44. (Previously presented) A method for operating a roaming wireless terminal node in a communication network having at least one bridging node that transmits at predetermined intervals a first message indicating the presence of a pending message, the method comprising:

- operating in a sleep mode;
- waking to receive a first message;

determining from a received first message whether there is a pending message for the terminal node; and
requesting the pending message if it is determined from the first message that there is a pending message for the terminal node.

45. (Previously presented) A method for operating a bridging node in a communication network for communicating with a plurality of roaming wireless terminal nodes that operate in a sleep mode and that wake to receive messages, the method comprising:

transmitting at predetermined intervals, a first message indicating the presence of pending messages for one or more roaming wireless terminal nodes;

receiving a request for a pending message from a roaming wireless terminal node that has determined from the first message that a pending message for the roaming wireless terminal node is present; and

transmitting the pending message to the roaming wireless terminal node in response to the received request.

46. (Previously presented) The method for operating a bridging node as recited in claim 45 including storing pending messages until a predetermined number of first messages have been transmitted and delivery is unsuccessful.

47. (Previously presented) A method for operating a bridging node and a roaming wireless terminal node in a communication network comprising:

transmitting from a bridging node at predetermined intervals, a first message indicating the presence of a pending message;

operating the terminal node in a sleep mode;

waking the terminal node to receive a first message;

determining at the terminal node from a received first message the presence of a pending message for the terminal node; and

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requesting a pending message if a pending message for the terminal node is determined to be present.

48. (Currently amended) An electrical circuit for utilization in a roaming wireless terminal node in a communication network having at least one bridging node that transmits at predetermined intervals a first message indicating the presence of a pending message, the electrical circuit comprising:

at least one processor ~~that operates~~configured to, at least:

- cause the roaming wireless terminal node to operate in a sleep mode;
- cause the roaming wireless terminal node to wake from the sleep mode to receive a first message;
- determine from a received first message whether there is a pending message for the terminal node; and
- cause the roaming wireless terminal to request the pending message if it is determined from the first message that there is a pending message for the terminal node.

49. (Currently amended) An electrical circuit for utilization in a bridging node in a communication network for communicating with a plurality of roaming wireless terminal nodes that operate in a sleep mode and that wake to receive messages, the electrical circuit comprising:

at least one processor ~~that operates~~configured to, at least:

- cause the bridging node to transmit at predetermined intervals, a first message indicating the presence of pending messages for one or more roaming wireless terminal nodes;
- receive a request for a pending message from a roaming wireless terminal node that has determined from the first message that a pending message for the roaming wireless terminal node is present; and
- cause the bridging node to transmit the pending message to the roaming wireless terminal node in response to the received request.

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50. (Previously presented) The method of claim 44, further comprising, after waking to receive a first message, receiving the first message from a bridging node.

51. (Previously presented) The method of claim 50, where the bridging node is an intermediate node in the communication network.

52. (Previously presented) The method of claim 50, where the bridging node is a node of a spanning tree.

53. (Previously presented) The method of claim 50, where the bridging node is a base station of a communication network.

54. (Previously presented) The method of claim 50, where the bridging node is an access point of a communication network.

55. (Previously presented) The method of claim 50, where the bridging node relays messages between other nodes.

56. (Previously presented) The method of claim 50, where the bridging node routes messages between other nodes.

57. (Previously presented) The method of claim 44, where prior to transmitting the first message, the bridging node immediately attempts to communicate the pending message to the roaming wireless terminal node upon receipt of the pending message from another network node.

58. (Previously presented) The method of claim 57, where the bridging node immediately attempts to communicate the pending message to the roaming wireless terminal node by, at least in part, queuing the pending message for transmission to the roaming wireless terminal node.

59. (Previously presented) The method of claim 57, where the bridging node immediately attempts to communicate the pending message to the roaming wireless terminal node by, at least in part, attempting to acquire access to a communication medium.

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60. (Previously presented) The method of claim 44, where the roaming wireless terminal node is operable to receive electrical power from a battery.

61. (Previously presented) The method of claim 44, where the roaming wireless terminal node is a hand-held terminal.

62. (Previously presented) The method of claim 44, where the roaming wireless terminal node comprises a hand-held computer.

63. (Previously presented) The method of claim 44, where the roaming wireless terminal node is operable to communicate utilizing spread spectrum communications.

64. (Previously presented) The method of claim 44, where the method is performed at the roaming wireless terminal node by, at least in part, utilizing a processor executing software instructions stored in a memory of the roaming wireless terminal node.

65. (Previously presented) The method of claim 44, where the roaming wireless terminal node is a terminal that is able to be moved.

66. (Previously presented) The method of claim 44, wherein the sleep mode is an energy-saving mode.

67. (Previously presented) The method of claim 44, wherein the sleep mode comprises operating receiver circuitry of the roaming wireless terminal node in a powered down state.

68. (Previously presented) The method of claim 44, further comprising determining at the roaming wireless terminal node when to wake to receive the first message.

69. (Previously presented) The method of claim 68, wherein determining when to wake to receive the first message comprises determining when to wake to receive the first message based, at least in part, on information received from the bridging node.

70. (Previously presented) The method of claim 68, wherein determining when to wake to receive the first message comprises determining when to wake to receive the first message based, at least in part, on seed information received from the bridging node.

71. (Previously presented) The method of claim 68, wherein determining when to wake to receive the first message comprises determining when to wake to receive the first message based, at least in part, on temporal offset information received from the bridging node.

72. (Previously presented) The method of claim 68, wherein determining when to wake to receive the first message comprises determining when to wake to receive the first message based, at least in part, on an expected duration of a communication between another roaming wireless terminal node and the bridging node.

73. (Previously presented) The method of claim 44, wherein waking to receive a first message comprises waking to receive the first message at a predetermined interval.

74. (Previously presented) The method of claim 44, wherein waking to receive a first message comprises waking to receive the first message at a consistent predetermined interval.

75. (Previously presented) The method of claim 44, wherein waking to receive a first message comprises waking to receive the first message at a predetermined interval that comprises a pseudo-random component.

76. (Previously presented) The method of claim 44, wherein waking to receive a first message comprises waking to receive the first message at a predetermined interval that is based, at least in part, on a consistent time interval adjusted by a pseudo-random amount.

77. (Previously presented) The method of claim 44, further comprising synchronizing waking of the roaming wireless terminal node to receive the first message following operation in the sleep mode.

78. (Previously presented) The method of claim 44, wherein waking to receive a first message comprises waking to receive a first message after operating in a sleep mode for a plurality of consecutive predetermined intervals.

79. (Previously presented) The method of claim 44, wherein waking to receive a first message comprises waking for up to a maximum listening period, where the maximum listening period is at least a maximum expected time interval between consecutive transmissions of the first message.

80. (Previously presented) The method of claim 44, further comprising determining whether to consider a received first message based, at least in part, on signal strength.

81. (Previously presented) The method of claim 44, wherein the first message is a beacon message.

82. (Previously presented) The method of claim 44, wherein the first message is a HELLO message.

83. (Previously presented) The method of claim 44, wherein the first message comprises a plurality of sub-messages of different respective types.

84. (Previously presented) The method of claim 44, where the first message is broadcast to a plurality of roaming wireless terminal nodes.

85. (Previously presented) The method of claim 44, where the first message is transmitted at a consistent predetermined interval.

86. (Previously presented) The method of claim 44, where the first message is transmitted at a predetermined interval comprising a pseudo-random component.

87. (Previously presented) The method of claim 44, where the first message is transmitted at an inconsistent predetermined interval.

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88. (Previously presented) The method of claim 44, further comprising utilizing information communicated with the first message to attach to the communication network.

89. (Previously presented) The method of claim 44, further comprising utilizing information communicated with the first message to modify attachment to the communication network.

90. (Previously presented) The method of claim 44, further comprising determining when to wake to receive a second message based, at least in part, on information communicated with the first message.

91. (Previously presented) The method of claim 44, further comprising determining when to wake to receive a second message based, at least in part, on seed information communicated with the first message.

92. (Previously presented) The method of claim 44, further comprising determining when to wake to receive a second message based, at least in part, on temporal displacement information communicated with the first message.

93. (Previously presented) The method of claim 44, wherein the first message comprises a pending message list.

94. (Previously presented) The method of claim 44, wherein the first message comprises a list that indicates to the roaming wireless terminal node whether the roaming wireless terminal node has a message pending.

95. (Previously presented) The method of claim 44, wherein the first message comprises information indicating that a pending message for the roaming wireless terminal node is stored and awaiting delivery to the roaming wireless terminal node.

96. (Previously presented) The method of claim 44, wherein the first message comprises information indicating that at least one pending message is awaiting delivery to the roaming

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wireless terminal node and at least one other pending message is awaiting delivery to another roaming wireless terminal node.

97. (Previously presented) The method of claim 44, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery.

98. (Previously presented) The method of claim 44, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing at least one characteristic of the stored pending message.

99. (Previously presented) The method of claim 44, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing a size of the stored pending message.

100. (Previously presented) The method of claim 44, wherein the first message comprises information of the roaming wireless terminal node's address to indicate that a stored pending message is awaiting delivery to the roaming wireless terminal node.

101. (Previously presented) The method of claim 44, wherein the first message comprises information indicating that one or more pending messages are stored in a base station of the communication network and awaiting delivery to the roaming wireless terminal node.

102. (Previously presented) The method of claim 44, wherein the first message comprises information indicating that one or more pending messages are stored in a node of the communication network and awaiting delivery to the roaming wireless terminal node.

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103. (Previously presented) The method of claim 44, wherein the first message comprises information indicating that one or more pending messages are stored in a parent node of the roaming wireless terminal node.

104. (Previously presented) The method of claim 44, wherein the first message comprises information indicating that one or more pending mail messages are awaiting delivery to the roaming wireless terminal node.

105. (Previously presented) The method of claim 44, further comprising communicating information to the bridging node regarding how long a message should be stored for the roaming wireless terminal node.

106. (Previously presented) The method of claim 44, further comprising communicating information to the bridging node indicating that the roaming wireless terminal node is operable in a sleep mode.

107. (Previously presented) The method of claim 44, further comprising communicating information to the bridging node regarding how long the roaming wireless terminal node might operate in a sleep mode.

108. (Previously presented) The method of claim 44, wherein the pending message comprises a mail message.

109. (Previously presented) The method of claim 44, further comprising forming a transport connection to receive the pending message.

110. (Previously presented) The method of claim 109, wherein forming a transport connection comprises forming a TCP connection.

111. (Previously presented) The method of claim 109, wherein forming a transport connection comprises forming a VMTP connection.

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112. (Previously presented) The method of claim 44, further comprising forming a connection-oriented communication link to receive the pending message if the pending message is a first type of message and forming a non-connection-oriented communication link to receive the pending message if the pending message is a second type of message.

113. (Previously presented) The method of claim 44, further comprising operating the roaming wireless terminal node in an awake state if a predetermined number of expected signals from the communication network are not received.

114. (Previously presented) The method of claim 44, further comprising operating the roaming wireless terminal node in the sleep mode for at least a portion of an expected delay to receive a message in response to a message sent from the roaming wireless terminal node.

115. (Previously presented) The method of claim 44, further comprising, after transmitting a request for the pending message, operating the roaming wireless terminal node in the sleep mode for at least a portion of an expected delay to receive the requested pending message in response to the transmitted request.

116. (Previously presented) The method of claim 44, further comprising utilizing a keyboard of the roaming wireless terminal node to collect information to be communicated to the bridging node.

117. (Previously presented) The method of claim 44, wherein requesting the pending message comprises transmitting a message to the bridging node requesting the pending message.

118. (Previously presented) The method of claim 44, wherein requesting the pending message comprises transmitting a message to the bridging node requesting at least one pending message.

119. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor ~~is further operates~~ is further configured to, after waking the roaming wireless terminal node to receive a first message, receive the first message from the bridging node.

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120. (Previously presented) The electrical circuit of claim 119, where the bridging node is an intermediate node in the communication network.

121. (Previously presented) The electrical circuit of claim 119, where the bridging node is a node of a spanning tree.

122. (Previously presented) The electrical circuit of claim 119, where the bridging node is a base station of a communication network.

123. (Previously presented) The electrical circuit of claim 119, where the bridging node is an access point of a communication network.

124. (Previously presented) The electrical circuit of claim 119, where the bridging node relays messages between other nodes.

125. (Previously presented) The electrical circuit of claim 119, where the bridging node routes messages between other nodes.

126. (Previously presented) The electrical circuit of claim 48, where prior to transmitting the first message, the bridging node immediately attempts to communicate the pending message to the roaming wireless terminal node upon receipt of the pending message from another network node.

127. (Previously presented) The electrical circuit of claim 126, where the bridging node immediately attempts to communicate the pending message to the roaming wireless terminal node by, at least in part, queuing the pending message for transmission to the roaming wireless terminal node.

128. (Previously presented) The electrical circuit of claim 126, where the bridging node immediately attempts to communicate the pending message to the roaming wireless terminal node by, at least in part, attempting to acquire access to a communication medium.

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129. (Previously presented) The electrical circuit of claim 48, further comprising circuitry operable to receive electrical power from a battery.

130. (Previously presented) The electrical circuit of claim 48, where the roaming wireless terminal node is a hand-held terminal.

131. (Previously presented) The electrical circuit of claim 48, further comprising hand-held computer circuitry.

132. (Currently amended) The electrical circuit of claim 48, further comprising circuitry ~~that operates~~configured to communicate utilizing spread spectrum communications.

133. (Previously presented) The electrical circuit of claim 48, further comprising a memory comprising software instructions and wherein the at least one processor operates by, at least in part, executing the software instructions.

134. (Previously presented) The electrical circuit of claim 48, where the roaming wireless terminal node is a terminal that is able to be moved.

135. (Previously presented) The electrical circuit of claim 48, where the sleep mode is an energy-saving mode.

136. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor ~~operates~~is configured to cause the roaming wireless terminal node to operate in a sleep mode by, at least in part, causing the powering down of receiver circuitry of the roaming wireless terminal node.

137. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor ~~operates~~is configured to determine when to wake the roaming wireless terminal node to receive the first message.

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138. (Currently amended) The electrical circuit of claim 137, wherein the at least one processor ~~operates~~ is configured to determine when to wake the roaming wireless terminal node to receive the first message based, at least in part, on information received from the bridging node.

139. (Currently amended) The electrical circuit of claim 137, wherein the at least one processor ~~operates~~ is configured to determine when to wake the roaming wireless terminal node to receive the first message comprises based, at least in part, on seed information received from the bridging node.

140. (Currently amended) The electrical circuit of claim 137, wherein the at least one processor ~~operates~~ is configured to determine when to wake the roaming wireless terminal node to receive the first message based, at least in part, on temporal offset information received from the bridging node.

141. (Currently amended) The electrical circuit of claim 137, wherein the at least one processor ~~operates~~ is configured to determine when to wake the roaming wireless terminal node to receive the first message based, at least in part, on an expected duration of a communication between another roaming wireless terminal node and the bridging node.

142. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor ~~operates~~ is configured to wake the roaming wireless terminal node to receive a first message by, at least in part, operating to wake the roaming wireless terminal node to receive the first message at a predetermined interval.

143. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor ~~operates~~ is configured to wake the roaming wireless terminal node to receive a first message by, at least in part, operating to wake the roaming wireless terminal node to receive the first message at a consistent predetermined interval.

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144. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to wake the roaming wireless terminal node to receive a first message by, at least in part, operating to wake the roaming wireless terminal node to receive the first message at a predetermined interval that comprises a pseudo-random component.

145. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to wake the roaming wireless terminal node to receive a first message by, at least in part, operating to wake the roaming wireless terminal node to receive the first message at a predetermined interval that is based, at least in part, on a consistent time interval adjusted by a pseudo-random adjustment.

146. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to synchronize waking of the roaming wireless terminal node to receive the first message following operation in the sleep mode.

147. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to wake the roaming wireless terminal node to receive a first message by, at least in part, operating to wake the roaming wireless terminal node to receive a first message after operating in a sleep mode for a plurality of consecutive predetermined intervals.

148. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to wake the roaming wireless terminal node to receive a first message by, at least in part, operating to wake the roaming wireless terminal node for up to a maximum listening period, where the maximum listening period is at least a maximum expected time interval between consecutive transmissions of the first message.

149. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to determine whether to consider a received first message based, at least in part, on signal strength.

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150. (Previously presented) The electrical circuit of claim 48, wherein the first message is a beacon message.

151. (Previously presented) The electrical circuit of claim 48, wherein the first message is a HELLO message.

152. (Canceled)

153. (Previously presented) The electrical circuit of claim 48, where the first message is broadcast to a plurality of roaming wireless terminal nodes.

154. (Previously presented) The electrical circuit of claim 48, where the first message is transmitted at a consistent predetermined interval.

155. (Previously presented) The electrical circuit of claim 48, where the first message is transmitted at a predetermined interval comprising a pseudo-random component.

156. (Previously presented) The electrical circuit of claim 48, where the first message is transmitted at an inconsistent predetermined interval.

157. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to utilize information communicated with the first message to cause the roaming wireless terminal node to attach to the communication network.

158. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to utilize information communicated with the first message to cause the roaming wireless terminal node to modify attachment to the communication network.

159. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to determine when to wake the roaming wireless terminal node to receive a second message based, at least in part, on information communicated with the first message.

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160. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to determine when to wake the roaming wireless terminal node to receive a second message based, at least in part, on seed information communicated with the first message.

161. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to determine when to wake the roaming wireless terminal node to receive a second message based, at least in part, on temporal displacement information communicated with the first message.

162. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises a pending message list.

163. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises a list that indicates to the roaming wireless terminal node whether the roaming wireless terminal node has a message pending.

164. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information indicating that a pending message for the roaming wireless terminal node is stored and awaiting delivery to the roaming wireless terminal node.

165. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information indicating that at least one pending message is awaiting delivery to the roaming wireless terminal node and at least one other pending message is awaiting delivery to another roaming wireless terminal node.

166. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery.

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167. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing at least one characteristic of the stored pending message.

168. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing a size of the stored pending message.

169. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information of the roaming wireless terminal node's address to indicate that a stored pending message is awaiting delivery to the roaming wireless terminal node.

170. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information indicating that one or more pending messages are stored in a base station of the communication network and awaiting delivery to the roaming wireless terminal node.

171. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information indicating that one or more pending messages are stored in a node of the communication network and awaiting delivery to the roaming wireless terminal node.

172. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information indicating that one or more pending messages are stored in a parent node of the roaming wireless terminal node.

173. (Previously presented) The electrical circuit of claim 48, wherein the first message comprises information indicating that one or more pending mail messages are awaiting delivery to the roaming wireless terminal node.

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174. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to cause the roaming wireless terminal node to communicate information to the network node regarding how long a message should be stored for the roaming wireless terminal node.

175. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to cause the roaming wireless terminal node to communicate information to the network node indicating that the roaming wireless terminal node is operable in a sleep mode.

176. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to cause the roaming wireless terminal node to communicate information to the network node regarding how long the roaming wireless terminal node might operate in a sleep mode.

177. (Previously presented) The electrical circuit of claim 48, wherein the pending message comprises a mail message.

178. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to cause the roaming wireless terminal node to form a transport connection to receive the pending message.

179. (Previously presented) The electrical circuit of claim 178, wherein the transport connection comprises a TCP connection.

180. (Previously presented) The electrical circuit of claim 178, wherein the transport connection comprises a VMTP connection.

181. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to cause the roaming wireless terminal node to form a connection-oriented communication link to receive the pending message if the pending message

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is a first type of message and cause the roaming wireless terminal node to form a non-connection-oriented communication link to receive the pending message if the pending message is a second type of message.

182. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to cause the roaming wireless terminal node to operate in an awake state if a predetermined number of expected signals from the communication network are not received.

183. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to cause the roaming wireless terminal node to operate in the sleep mode for at least a portion of an expected delay to receive a message in response to a message sent from the roaming wireless terminal node.

184. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to, after a request for the pending message is transmitted, cause the roaming wireless terminal node to operate in the sleep mode for at least a portion of an expected delay to receive the requested pending message in response to the transmitted request.

185. (Currently amended) The electrical circuit of claim 48, further comprising circuitry ~~that operates~~ configured to utilize a keyboard of the roaming wireless terminal node to collect information to be communicated to the network node.

186. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to request the pending message by, at least in part, causing the transmission of a message to the network node requesting the pending message.

187. (Currently amended) The electrical circuit of claim 48, wherein the at least one processor is configured ~~operates~~ to request the pending message by, at least in part, causing the transmission of a message to the network node requesting at least one pending message.

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188. (Previously presented) The method of claim 45, where the bridging node is an intermediate node in the communication network.

189. (Previously presented) The method of claim 45, where the bridging node is a node of a spanning tree.

190. (Previously presented) The method of claim 45, where the bridging node is a base station of the communication network.

191. (Previously presented) The method of claim 45, where the bridging node is a wireless access point of the communication network.

192. (Previously presented) The method of claim 45, where the bridging node relays messages between other nodes.

193. (Previously presented) The method of claim 45, wherein the bridging node routes messages between other nodes.

194. (Previously presented) The method of claim 45, wherein prior to transmitting the first message indicating the presence of a particular pending message for a particular roaming wireless terminal node, the bridging node immediately attempts to communicate the particular pending message to the particular roaming wireless terminal node upon receipt of the particular pending message from another network node.

195. (Previously presented) The method of claim 194, wherein the bridging node immediately attempts to communicate the particular pending message to the roaming wireless terminal node by, at least in part, queuing the particular pending message for transmission to the roaming wireless terminal node.

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196. (Previously presented) The method of claim 194, wherein the bridging node immediately attempts to communicate the particular pending message to the roaming wireless terminal node by, at least in part, attempting to acquire access to a communication medium.

197. (Previously presented) The method of claim 45, wherein the roaming wireless terminal node is a hand-held terminal.

198. (Previously presented) The method of claim 45, where the bridging node is operable to communicate utilizing spread spectrum communications.

199. (Previously presented) The method of claim 45, where the method is performed, at least in part, utilizing a processor executing software instructions stored in a memory of the bridging node.

200. (Previously presented) The method of claim 45, wherein the roaming wireless terminal node is a wireless terminal node that is able to be moved.

201. (Previously presented) The method of claim 45, where the sleep mode is an energy-saving mode.

202. (Previously presented) The method of claim 45, further comprising determining at the bridging node when to transmit the first message.

203. (Previously presented) The method of claim 202, further comprising communicating information to the roaming wireless terminal node indicative of when the first message will be transmitted.

204. (Previously presented) The method of claim 202, wherein determining when to transmit the first message comprises determining when to transmit the first message based, at least in part, on a randomization seed, and further comprising communicating information of the randomization seed to the roaming wireless terminal node.

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205. (Previously presented) The method of claim 202, wherein determining when to transmit the first message comprises adjusting a calculated randomized transmission time by a temporal offset to avoid a collision, and further comprising communicating information of the temporal offset to the roaming wireless terminal node.

206. (Previously presented) The method of claim 45, wherein transmitting at predetermined intervals comprises transmitting at a consistent predetermined interval.

207. (Previously presented) The method of claim 45, wherein transmitting at predetermined intervals comprises transmitting at inconsistent predetermined intervals.

208. (Previously presented) The method of claim 45, wherein transmitting at predetermined intervals comprises transmitting at a predetermined interval that comprises a pseudo-random component.

209. (Previously presented) The method of claim 45, wherein transmitting at predetermined intervals comprises transmitting at a predetermined interval that is based, at least in part, on a consistent time interval adjusted by a pseudo-random amount.

210. (Previously presented) The method of claim 45, wherein the first message comprises information to assist the roaming wireless terminal node in synchronizing waking of the roaming wireless terminal node from the sleep mode.

211. (Previously presented) The method of claim 45, wherein the first message is a beacon message.

212. (Previously presented) The method of claim 45, wherein the first message is a HELLO message.

213. (Canceled)

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214. (Previously presented) The method of claim 45, where transmitting the first message comprises broadcasting the first message to a plurality of roaming wireless terminal nodes.

215. (Previously presented) The method of claim 45, wherein the first message comprises information to assist a roaming wireless terminal node in attaching to the communication network.

216. (Previously presented) The method of claim 45, wherein the first message comprises information to assist a roaming wireless terminal node in modifying attachment to the communication network.

217. (Previously presented) The method of claim 45, wherein the first message comprises information to assist a roaming wireless terminal node in determining when to wake to receive a second message transmitted after the first message.

218. (Previously presented) The method of claim 45, wherein the first message comprises a pending message list.

219. (Previously presented) The method of claim 45, wherein the first message comprises a list that indicates to the roaming wireless terminal node whether the roaming wireless terminal node has a message pending.

220. (Previously presented) The method of claim 45, wherein the first message comprises information indicating that a pending message for the roaming wireless terminal node is stored and awaiting delivery to the roaming wireless terminal node.

221. (Previously presented) The method of claim 45, wherein the first message comprises information indicating that at least one pending message is awaiting delivery to the roaming wireless terminal node and at least one other pending message is awaiting delivery to another roaming wireless terminal node.

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222. (Previously presented) The method of claim 45, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery.

223. (Previously presented) The method of claim 45, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing at least one characteristic of the stored pending message.

224. (Previously presented) The method of claim 45, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing a size of the stored pending message.

225. (Previously presented) The method of claim 45, wherein the first message comprises information of an address of the roaming wireless terminal node to indicate that a stored pending message is awaiting delivery to the roaming wireless terminal node.

226. (Previously presented) The method of claim 45, wherein the first message comprises information indicating that one or more pending messages are stored in a base station of the communication network and awaiting delivery to the roaming wireless terminal node.

227. (Previously presented) The method of claim 45, wherein the first message comprises information indicating that one or more pending messages are stored in a node of the communication network and awaiting delivery to the roaming wireless terminal node.

228. (Previously presented) The method of claim 45, wherein the first message comprises information indicating that one or more pending messages are stored in a parent node of the roaming wireless terminal node.

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229. (Previously presented) The method of claim 45, wherein the first message comprises information indicating that one or more pending mail messages are awaiting delivery to the roaming wireless terminal node.

230. (Previously presented) The method of claim 45, further comprising, prior to transmitting the first message, receiving the pending message from another node of the communication network.

231. (Previously presented) The method of claim 230, further comprising, prior to transmitting the first message, attempting to immediately deliver the received pending message to the roaming wireless terminal node.

232. (Previously presented) The method of claim 231, further comprising, prior to transmitting the first message, storing the received pending message in memory for later delivery to the roaming wireless terminal node.

233. (Previously presented) The method of claim 232, further comprising, after transmitting a predetermined number of messages indicating that the stored pending message is awaiting delivery, removing the stored pending message from memory.

234. (Previously presented) The method of claim 232, wherein the predetermined number is based, at least in part, on information communicated to the bridging node from the roaming wireless terminal node.

235. (Previously presented) The method of claim 45, further comprising receiving information from the roaming wireless terminal node regarding how long a message should be stored for the roaming wireless terminal node.

236. (Previously presented) The method of claim 45, further comprising receiving information from the roaming wireless terminal node indicating that the roaming wireless terminal node is operable in a sleep mode.

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237. (Previously presented) The method of claim 45, further comprising receiving information from the roaming wireless terminal node indicating how long the roaming wireless terminal node might operate in a sleep mode.

238. (Previously presented) The method of claim 45, wherein the pending message comprises a mail message.

239. (Previously presented) The method of claim 45, further comprising forming a transport connection to transmit the pending message to the roaming wireless terminal node.

240. (Previously presented) The method of claim 239, wherein forming a transport connection comprises forming a TCP connection.

241. (Previously presented) The method of claim 239, wherein forming a transport connection comprises forming a VMTP connection.

242. (Previously presented) The method of claim 45, further comprising forming a connection-oriented communication link to transmit the pending message to the roaming wireless terminal node if the pending message is a first type of message and forming a non-connection-oriented communication link to transmit the pending message to the roaming wireless terminal node if the pending message is a second type of message.

243. (Previously presented) The method of claim 45, wherein receiving a request for the pending message comprises receiving a message from the roaming wireless terminal node requesting one or more pending messages.

244. (Previously presented) The electrical circuit of claim 49, where the bridging node is an intermediate node in the communication network.

245. (Previously presented) The electrical circuit of claim 49, where the bridging node is a node of a spanning tree.

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246. (Previously presented) The electrical circuit of claim 49, where the bridging node is a base station of the communication network.

247. (Previously presented) The electrical circuit of claim 49, where the bridging node is a wireless access point of the communication network.

248. (Previously presented) The electrical circuit of claim 49, where the bridging node relays messages between other nodes.

249. (Previously presented) The electrical circuit of claim 49, where the bridging node routes messages between other nodes.

250. (Currently amended) The electrical circuit of claim 49, wherein prior to causing the bridging node to transmit the first message indicating the presence of a particular pending message for a particular roaming wireless terminal node, the at least one processor is configured ~~operates to~~ cause the bridging node to immediately attempt to communicate the particular pending message to the particular roaming wireless terminal node.

251. (Currently amended) The electrical circuit of claim 250, wherein the at least one processor is configured ~~operates to~~ cause the bridging node to immediately attempt to communicate the particular pending message to the roaming wireless terminal node by, at least in part, operating to cause the bridging node to queue the particular pending message for transmission to the roaming wireless terminal node.

252. (Currently amended) The electrical circuit of claim 250, wherein the at least one processor is configured ~~operates to~~ cause the bridging node to immediately attempt to communicate the particular pending message to the roaming wireless terminal node by, at least in part, operating to cause the bridging node to attempt to acquire access to a communication medium.

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253. (Previously presented) The electrical circuit of claim 49, where the roaming wireless terminal node is a hand-held terminal.

254. (Previously presented) The electrical circuit of claim 49, where the bridging node is operable to communicate utilizing spread spectrum communications.

255. (Previously presented) The electrical circuit of claim 49, where the roaming wireless terminal node is a wireless terminal node that is able to be moved.

256. (Previously presented) The electrical circuit of claim 49, where the sleep mode is an energy-saving mode.

257. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to determine when to transmit the first message.

258. (Currently amended) The electrical circuit of claim 257, wherein the at least one processor ~~causes~~ is configured to cause the bridging node to communicate information to the roaming wireless terminal node indicative of when the first message will be transmitted.

259. (Currently amended) The electrical circuit of claim 257, wherein the at least one processor is configured ~~operates~~ to determine when to transmit the first message based, at least in part, on a randomization seed, and further ~~operates~~ configured to cause the bridging node to communicate information of the randomization seed to the roaming wireless terminal node.

260. (Currently amended) The electrical circuit of claim 257, wherein the at least one processor is configured ~~operates~~ to determine when to transmit the first message by, at least in part, operating to adjust a calculated randomized transmission time by a temporal offset to avoid a collision, and further ~~operates~~ configured to cause the bridging node to communicate information of the temporal offset to the roaming wireless terminal node.

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261. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to cause the bridging node to transmit the first message at predetermined intervals by, at least in part, operating to cause the bridging node to transmit the first message at a consistent predetermined interval.

262. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to cause the bridging node to transmit the first message at predetermined intervals by, at least in part, operating to cause the bridging node to transmit the first message at inconsistent predetermined intervals.

263. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to cause the bridging node to transmit the first message at predetermined intervals by, at least in part, operating to cause the bridging node to transmit the first message at a predetermined interval that comprises a pseudo-random component.

264. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to cause the bridging node to transmit the first message at predetermined intervals by, at least in part, operating to cause the bridging node to transmit the first message at a predetermined interval that is based, at least in part, on a consistent time interval adjusted by a pseudo-random amount.

265. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information to assist the roaming wireless terminal node in synchronizing waking of the roaming wireless terminal node from the sleep mode.

266. (Previously presented) The electrical circuit of claim 49, wherein the first message is a beacon message.

267. (Previously presented) The electrical circuit of claim 49, wherein the first message is a HELLO message.

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268. (Canceled)

269. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor ~~causes~~ is configured to cause the bridging node to transmit the first message by, at least in part, causing the bridging node to broadcast the first message to a plurality of roaming wireless terminal nodes.

270. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information to assist a roaming wireless terminal node in attaching to the communication network.

271. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information to assist a roaming wireless terminal node in modifying attachment to the communication network.

272. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information to assist a roaming wireless terminal node in determining when to wake to receive a second message transmitted after the first message.

273. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises a pending message list.

274. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises a list that indicates to the roaming wireless terminal node whether the roaming wireless terminal node has a message pending.

275. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information indicating that a pending message for the roaming wireless terminal node is stored and awaiting delivery to the roaming wireless terminal node.

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276. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information indicating that at least one pending message is awaiting delivery to the roaming wireless terminal node and at least one other pending message is awaiting delivery to another roaming wireless terminal node.

277. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery.

278. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing at least one characteristic of the stored pending message.

279. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information identifying the roaming wireless terminal node as a terminal for which a stored pending message is awaiting delivery and information describing a size of the stored pending message.

280. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information of an address of the roaming wireless terminal node to indicate that a stored pending message is awaiting delivery to the roaming wireless terminal node.

281. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information indicating that one or more pending messages are stored in a base station of the communication network and awaiting delivery to the roaming wireless terminal node.

282. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information indicating that one or more pending messages are stored in a node of the communication network and awaiting delivery to the roaming wireless terminal node.

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283. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information indicating that one or more pending messages are stored in a parent node of the roaming wireless terminal node.

284. (Previously presented) The electrical circuit of claim 49, wherein the first message comprises information indicating that one or more pending mail messages are awaiting delivery to the roaming wireless terminal node.

285. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor, prior to operating to cause the bridging node to transmit the first message, is configured ~~operates~~ to cause the bridging node to receive the pending message from another node of the communication network.

286. (Currently amended) The electrical circuit of claim 285, wherein the at least one processor, prior to operating to cause the bridging node to transmit the first message, is configured ~~operates~~ to cause the bridging node to attempt to immediately deliver the received pending message to the roaming wireless terminal node.

287. (Currently amended) The electrical circuit of claim 286, wherein the at least one processor, prior to operating to cause the bridging node to transmit the first message, is configured ~~operates~~ to cause the bridging node to store the received pending message in memory for later delivery to the roaming wireless terminal node.

288. (Currently amended) The electrical circuit of claim 287, wherein the at least one processor, after operating to cause the bridging node to transmit a predetermined number of messages indicating that the stored pending message is awaiting delivery, is configured ~~operates~~ to cause the bridging node to remove the stored pending message from memory.

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289. (Previously presented) The electrical circuit of claim 287, wherein the predetermined number is based, at least in part, on information communicated to the bridging node from the roaming wireless terminal node.

290. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to receive information from the roaming wireless terminal node regarding how long a message should be stored for the roaming wireless terminal node.

291. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to receive information from the roaming wireless terminal node indicating that the roaming wireless terminal node is operable in a sleep mode.

292. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to receive information from the roaming wireless terminal node indicating how long the roaming wireless terminal node might operate in a sleep mode.

293. (Previously presented) The electrical circuit of claim 49, wherein the pending message comprises a mail message.

294. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to cause the bridging node to form a transport connection to transmit the pending message to the roaming wireless terminal node.

295. (Previously presented) The electrical circuit of claim 294, wherein the transport connection comprises a TCP connection.

296. (Previously presented) The electrical circuit of claim 294, wherein the transport connection comprises a VMTP connection.

297. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to cause the bridging node to form a connection-oriented

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communication link to transmit the pending message to the roaming wireless terminal node if the pending message is a first type of message and form a non-connection-oriented communication link to transmit the pending message to the roaming wireless terminal node if the pending message is a second type of message.

298. (Currently amended) The electrical circuit of claim 49, wherein the at least one processor is configured ~~operates~~ to receive a request for a pending message by, at least in part, operating to receive a message from the roaming wireless terminal node requesting one or more pending messages.

299. (New) The method of claim 44, further comprising building and storing a list of access points that are in communication range of the roaming wireless terminal.

300. (New) The method of claim 44, further comprising building and storing a list of access points that are in communication range of the roaming wireless terminal based, at least in part, on signal strength of respective signals received from access points.

301. (New) The electrical circuit of claim 48, wherein the at least one processor is configured to build and store a list of access points that are in communication range of the roaming wireless terminal.

302. (New) The electrical circuit of claim 48, wherein the at least one processor is configured to build and store a list of access points that are in communication range of the roaming wireless terminal based, at least in part, on signal strength of respective signals received from access points.